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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/978,171

10/15/2001

Navrit Singh

DSW-002

3929

25199

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09/08/2004

LARRY WILLIAMS

3645 MONTGOMERY DR

SANTA ROSA, CA 95405-5212

EXAMINER

HASAN, MOHAMMED A

ART UNIT

PAPER NUMBER

2873

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/978,171

Applicant(s)

SINGH ET AL.

Examiner

Mohammed Hasan

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/6/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 - 12, 21 - 23, 26, 33 - 36 is/are allowed.
- 6) ☒ Claim(s) 1 - 7, 13, 14, 16, 24, 25, 27 - 32 is/are rejected.
- 7) ☒ Claim(s) 8, 9, 15, 17 - 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 4 - 7, 24, and 27 - 32 are rejected under 35 U.S.C. 102 (e) as being anticipated by Michalicek et al (6,028,689).

Regarding claim 1, Michalicek et al discloses, a method of positioning components (i.e., a mirror 12) on a support structure (18) comprising the step of causing position changes by modifying at least portion of the material support structure by including at least one of: a density change (i.e., when electrostatic force is applied to the mirror, density of mirror property will change) (column 2, lines 14 – 34).

Regarding claim 4, Michalicek et al discloses, wherein the modifying at least a portion of the material comprises application of an amount of energy (i.e., electrical energy) (column 2, lines 28 - 34).

Regarding claim 5, Michalicek et al discloses, wherein the energy comprises a mechanical energy (i.e., electrostatic force apply to the support post 18, support post change the mirror position) (column 3, lines 15 - 24).

Regarding claim 6, Michalicek et al discloses, wherein the energy comprises at least one pulse of laser energy (column 4, line 3).

Regarding claim 7, Michalicek et al discloses, wherein the material of the support structure comprises a polymer (column 2, lines 60 - 61).

Regarding claim 13, Michalicek et al discloses (refer to figure 1) an optoelectronic package comprising: at least two optical components (12) (i.e., micromirro) at least one support structure (18) one of the optical components being supported by the support structure wherein the optical alignment of the optical components has been effected through changes in a dimension of the support structure by modifying at least a portion of the material of the support structure by including at least one of : a density change (i.e., when electrostatic force is applied to the mirror, density of mirror property will change) (column 2, lines 14 – 34).

Regarding claim 14, Michalicek et al discloses, wherein the dimension change result from at least one of: an application of an amount of energy to the support structure (18) (i.e., electrical energy) (column 2, lines 28 - 34).

Regarding claim 16, Michalicek et al discloses, a method of positioning components (12) on a support structure (18) comprising the step of causing position changes by modifying the density of at least a portion of the material of the support

structure (i.e., when electrostatic force is applied to the mirror, density of mirror property will change) (column 2, lines 14 – 34).

Regarding claim 24, Michalicek et al discloses (refer to figure 1) an optoelectronic package comprising: at least two optical components (12) (i.e., micromirror) at least one support structure (18) one of the optical components being supported by the support structure at least a portion of the support structure having an induced density variation for optical alignment of the optical components (12) (column 2, lines 14 – 34).

Regarding claim 25, Michalicek et al discloses (refer to figure 1) an optical package comprising: at least one optical component (12) and means for positioning the at least one optical component (column 2, lines 14 – 34).

Regarding claim 27, Michalicek et al discloses (refer to figure 1) a method of positioning components (12) on a support structure (18) comprising the step of causing position changes by inducing a dimension change in at least a portion of the material of the support structure (i.e., when electrostatic force is applied to the mirror, density of mirror property will change) (column 2, lines 14 – 34).

Regarding claim 28, Michalicek et al discloses, wherein the dimension change is the result of at a change in density (column 2, lines 14 – 34).

Regarding claim 29, Michalicek et al discloses, wherein the modifying at least a portion of the material comprises application of an amount of energy (i.e., electrical energy) (column 2, lines 28 - 34).

Regarding claim 30, Michalicek et al discloses, wherein the energy comprises a mechanical energy (i.e., electrostatic force apply to the support post 18, support post change the mirror position) (column 3, lines 15 - 24).

Regarding claim 31, Michalicek et al discloses, wherein the energy comprises at least one pulse of laser energy (column 4, line 3).

Regarding claim 32, Michalicek et al discloses, wherein the material of the support structure comprises a polymer (column 2, lines 60 - 61).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 3 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Michalicek (6,028,689) in view of Beall et al (5,219,799).

Regarding claims 2 and 3 as applied to claim 1, Michalicek discloses all of the claim limitations except density change a change in chemical composition profile and the internal stress change, a change in chemical composition profile. Beall et al discloses density change a change in chemical composition profile and the internal stress change, a change in chemical composition profile (column 3, lines 34 – 41, column 4, lines 51 – 55).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a crystal in to the Michalicek support structure for the purpose of high mechanical strength and toughness values as taught by Beall et al (column 2, lines 25 – 27).

Allowable Subject Matter

3. Claims 10 – 12, 21 – 23, 26, 33 - 36 are allowed.
4. The following is an examiner's statement of reasons for allowance: The prior art taken either singularly or in a combination fails to anticipate or fairly suggest the limitations of the independent claims, in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in independent claims 10, 21, 26, 33 and 34, for example which include, a method of alignment and assembly of an optical components at least one of the optical components having an associated support structure , the method comprising the steps of : a) monitoring the optical coupling efficiency for the optical components b) causing position changes of the at least one optical component in response to the coupling efficiency by modifying at least a portion of the material of the support structure by including at least one of density change, internal stress, and microstructure change to move the at least one optical component so as to achieve a substantial optimum optical coupling efficiency (claims 10, 33) ; optical alignment of the optical components has been effected through changes in a dimension of the support structure by at least a portion of the material of the support structure by inducing at least one of a phase

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change and a microstructure change (claim 34); and means for monitoring the optical coupling efficiency for the optical components and means for changing the relative position of at least one optical component with respect to at least one other optical component in response to the monitored coupling efficiency (claim 26).

5. Claims 8, 9, 15, and 17 - 20, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to show, an addition of a dissimilar material to a surface of the structure, an ion implantation of the support structure with an amount of a material, and at least two dissimilar materials and the internal stress change results from the removal of an amount of at least one of the dissimilar materials and the amount of energy comprises at least one pulse of laser energy and at least one chemical element to the support structure, density comprises including a change in crystalline phase, including a change in chemical composition, a change in microstructure, inducing the change in crystalline phase comprises application of an amount of energy to the support structure.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The closest prior art

Haruguchi et al (5,999,341) discloses, an optical pickup and supporting method therefor.

Blakley (6666,561 B1) discloses, a continuously variable analog micro-mirror device.

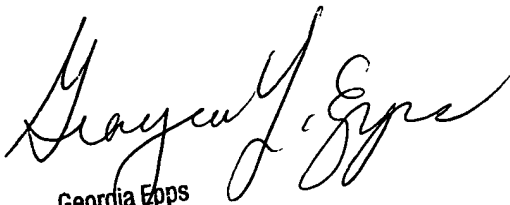
Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammed Hasan whose telephone number is (571) 272-2331. The examiner can normally be reached on M-TH, 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272- 2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MH
August 30, 2004


Georgia Epps
Supervisory Patent Examiner
Technology Center 2800